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# *Microprosthema jareckii,* a new species of stenopodidean shrimp (Crustacea: Decapoda: Stenopodidea: Spongicolidae) from Guana Island, British Virgin Islands

Joel W. Martin

(JWM) Research and Collections Branch, Natural History Museum of Los Angeles County, 900 Exposition Boulevard, Los Angeles, California 90007, U.S.A.

*Abstract.*—A new species of the stenopodidean shrimp genus *Microprosthema* Stimpson, *M. jareckii,* is described from two specimens collected off the coast of Guana Island, British Virgin Islands. The species differs from known congeners by the shape and spination of the rostrum, spination of the carapace, shape of the third pereiopod, dentition of the mandibular palp, and coloration (the new species is completely white). The new species is compared to all other known species of *Microprosthema* in the Caribbean.

Relatively few species of stenopodidean shrimps have been reported from the Caribbean and western Atlantic. Published reports include only six genera and 11 species. In the genus *Stenopus* Latreille, 1819, only two species, *S. hispidus* (Olivier, 1811) and *S. scutellatus* Rankin, 1898, have been reported. In the genus *Richardina* A. Milne Edwards, 1881, *R. spinicincta* A. Milne-Edwards 1881, is known from a single specimen (Goy 1982). One species of *Spongiocaris* Bruce & Baba, 1973, *S. hexactinellicola* Berggren, 1993, is known from the Bahamas, Dry Tortugas, and Puerto Rico (Berggren 1993, and J. Goy, unpublished data). Two species of the genus *Odontozona* Holthuis, 1946 (*O. striata* Goy, 1981 and *O. libertae* Gore, 1981) have been described, as have four species of the genus *Microprosthema* Stimpson, 1860. The known species of *Microprosthema* are *M. semilaeve* (von Martens, 1872), *M. manningi* Goy & Felder, 1988, *M. looense* Goy & Felder, 1988, and *M. granatense* Criales, 1997 (see Criales 1997 for a review and key). Criales (1997: 538) lists *M. inornatum* Manning & Chace, 1990, among the known western Atlantic species of *Microprosthema,* although to my knowledge *M. inornatum* is known only from the type locality (Ascension Island, eastern South Atlantic; Manning & Chace 1990). Additionally, I am aware of at least two other undescribed species of *Microprosthema* and several unpublished records of *Richardina spinicincta* and *Stenopus spinosus* Risso, 1826 (J. Goy, unpublished data). Finally, the genus *Paraspongicola* de Saint Laurent & Cléva, 1981, is now known in the Atlantic from deep waters off Venezuela (J. Goy, pers. comm. regarding an unpublished finding by B. Rodriguez Q.). Below I describe a new species of *Microprosthema* from Guana Island, British Virgin Islands.

## Materials and Methods

The specimens reported below were collected during the course of a biodiversity survey of the cryptic marine invertebrates of Guana Island, British Virgin Islands (18°28′33″N, 64°34′29″W) led by T. L. Zimmerman and J. W. Martin and funded by grants from the United States National Science Foundation and the Falconwood Corporation. Various collecting methods were employed during that survey, including light traps, hand collecting, and arrays of artificial reef matrices (ARMs). The

ARMs consisted of four slabs of concrete, each approximately 30 × 50 × 6 cm, containing holes of different sizes. The concrete slabs were set upon a basket filled with coral rubble, and the basket was set into the substrate so that the bottom concrete slab was roughly level with the sea floor. These arrays were deployed at a depth of 10 m at eight different locations around Guana Island, and at two locations in shallower water, in the summer of 1999 and were collected one year later. The two specimens of the new species of *Microprosthema* were collected from the ARM deployed off of Monkey Point, Guana Island, when that ARM was harvested on 20 July 2000. Other Caribbean material of the genus was examined during a visit to the National Museum of Natural History, Smithsonian Institution, Washington, D.C., in February of 2001, including the following specimens: holotype (USNM 233997) of *Microprosthema manningi* Goy & Felder, 1988; holotype (USNM 275993) of *Microprosthema granatense* Criales, 1997; non-type ovigerous female specimen (USNM 244439, Bahamas) of *Microprosthema semilaeve* von Martens. Both specimens of the new species have been deposited in the Crustacea collections of the Natural History Museum of Los Angeles County (LACM).

## Results

### Family Spongicolidae Schram, 1986
### Genus *Microprosthema* Stimpson, 1860

### *Microprosthema jareckii,* new species
Figs. 1–5

*Material examined.*—Holotype: male, LACM CR 2000 0081, photographic voucher number Vc1314, BVI Station 46C, 22 Jul 2000, ARM at Monkey Point, 10 m, SCUBA, morning dive, coll. T. Zimmerman, R. Ware, T. Haney, J. Martin. Allotype: female, LACM CR 2000 0082, photographic voucher number Vc1316, same collection data as for holotype.

*Description.*—Carapace (Figs. 1, 3a, b) with relatively few short dorsal and dorsolateral spines (as compared to other members of genus) directed anteriorly, and with numerous distally plumose setae giving overall "fuzzy" appearance. Cervical groove present but weak, with sharp spines just posterior to groove on dorsal and dorsolateral regions, and terminating at level of strong hepatic spine. Carapace spines more numerous and better developed on anterolateral (branchiostegal) regions. Antennal and orbital spines strong, acute, well developed. Rostrum large, extending to level of distal end of antennular peduncle, well developed, strongly curved downward, ventrally with 1 small subterminal tooth, dorsally with series of 5 teeth (excluding acute tip of rostrum), continuing posteriorly (with additional teeth) along well defined carina that extends back to cervical groove.

Eyes (Fig. 3a, b) each with cornea slightly smaller in diameter than eyestalk; eyestalk with small spines just proximal to, and extending slightly laterally over, cornea.

Abdomen (Figs. 1, 3c) smooth, lacking transverse ridges. Abdominal somites 1–3 with pleura terminating in rounded point bearing 3 setae (Fig. 3c), somites 4–6 more rounded than anterior ones. Pleura of somites 1–3 each bearing 2 or 3 teeth on anterior and posterior borders (those on anterior border more acute than those on posterior border).

Antenna 1 (antennule) (Fig. 4a, b) with large slightly curved stylocerite extending only to distal end of basal article, with smaller tooth on distal end of second article and pair of teeth on distalmost article of peduncle. Flagellar articles (Fig. 4b) heavily setose, with setae arising more or less circularly around each article, giving the flagella a bushy overall appearance (Fig. 2b).

Antenna 2 (Fig. 4c) with sharp teeth on all peduncular articles. Scaphocerite reaching well beyond tip of rostrum (tip of rostrum in dorsal view extending about 1/3 length of scaphocerite), strongly curved on medial border, nearly straight on lateral bor-

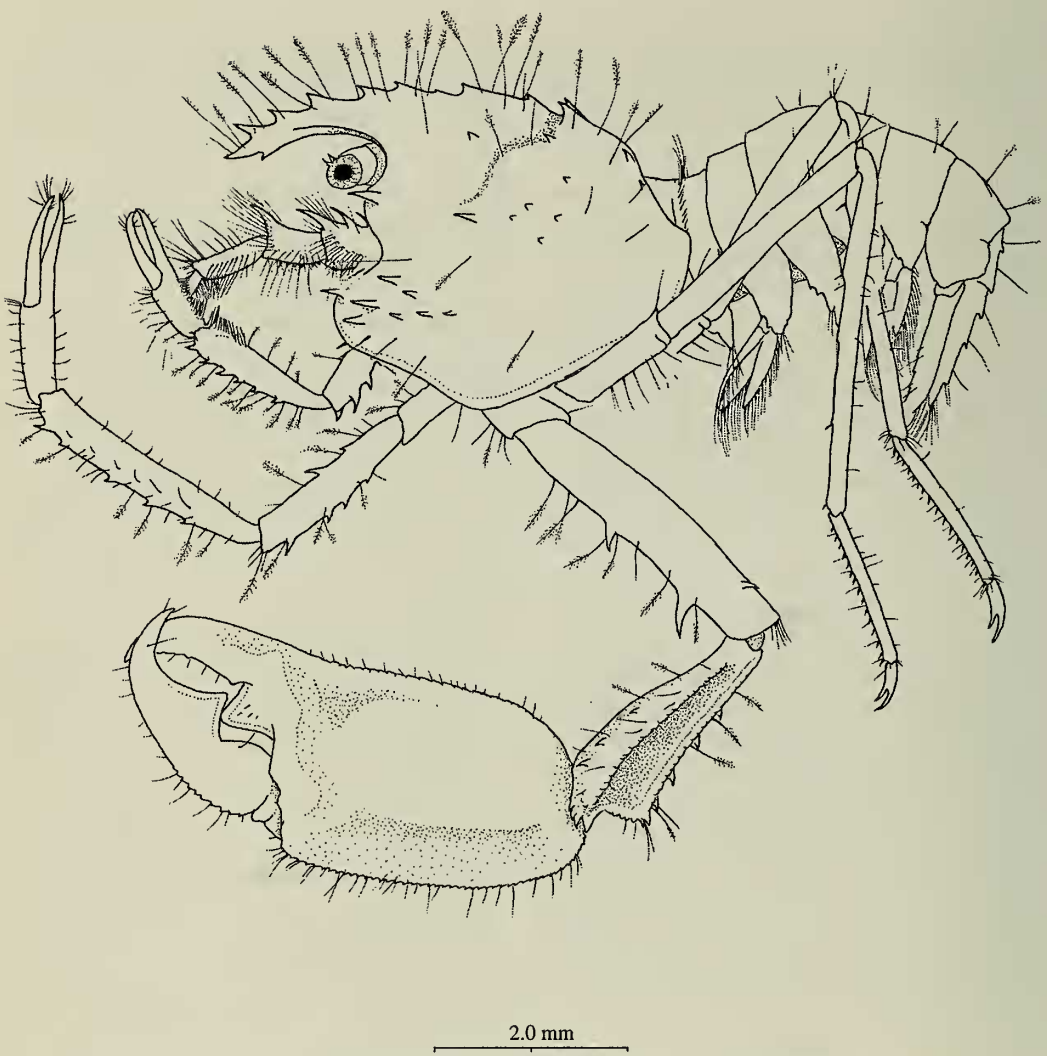


Fig. 1. *Microprosthema jareckii,* holotype male, LACM CR 2000 0082, composite view.

der. Lateral border with 4 sharp teeth in addition to sharp distolateral tooth at corner.

Mandible (Fig. 4d) on left side (right side not examined) with smooth, sharp, blade-like cutting edge, posterior side strongly concave (left side of Fig. 4d). Anterodistal corner of cutting edge marked by extremely long sharp tooth; posterodistal corner with shorter, subtriangular tooth. Mandibular palp composed of 3 articles, second of which bears 2 strong spines: 1 at approximate midlength and 1 near distal articulation with terminal article. Terminal article lanceolate, broadest at midlength, tapering to acute tip and bearing scattered setae as illustrated.

Maxilla 1 (Fig. 4e) with heavy, serrate spines on upper endite and scattered simple and plumose setae on lower endite. Palp with 2 articles, distalmost of which bears 2 short terminal setae. Maxilla 2 (Fig. 4f) endites strongly bilobed, with setation (proximal to distal) 10 + 5, 8 + 13. Blade of scaphognathite not examined.

Maxilliped 1 (Fig. 4g) with unsegmented endopod bearing 13 long plumose setae on

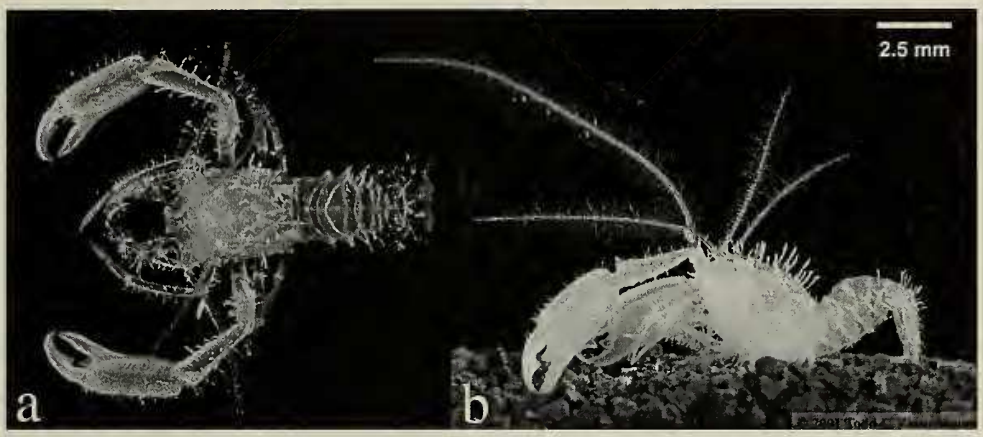


Fig. 2. *Microprosthema jareckii,* black and white photographs made from color 35 mm photographic slides (photographic voucher number Vc1314) of live holotype male (LACM CR 2000 0082), taken in small aquarium on Guana Island, BVI. a, dorsal view; b, lateral view. Photographs by T. L. Zimmerman.

curved anterolateral border. Basipodite long and wide, bearing numerous short setae, relatively straight along medial border and broadly curved on anterolateral border. Coxopodite small, approximately 1/5 length of basipodite and unsegmented. Exopod long and slender, with numerous plumose setae increasing in number distally and with minute crenulations beginning just distal to somewhat abrupt bend and continuing to tip. Epipod divided into equally sized distal and proximal lobes, neither with any setation.

Maxilliped 2 (Fig. 4h) with 4-segmented endopod. Dactylus lanceolate and densely setose on medial border. Propodus slightly shorter than dactylus and with dense medial setation similar to dactylus. Carpus approximately same length as propodus, triangular, with distal end broader, lacking dense setation but with 7–10 long, simple dorsodistal setae. Merus subrectangular, with 13 or 14 long simple setae spaced regularly on minute cuticular projections along medial border and with short simple setae on anterolateral border.

Maxilliped 3 (Fig. 4i, j) endopodite strongly developed, 5-segmented. Dactylus elongate-triangular. Propodus longer than dactylus, with dense setae along medial border and with distal dense setal brush ("setiferous organ" of Goy and Felder, 1988, and Criales, 1997); 4 long simple setae proximal to brush on medial border. Carpus approximately equal in length to propodus, with strong distolateral spine extending beyond distal border of segment, and 7 long, simple setae arising from slight cuticular protrusions along medial border. Merus slightly longer than carpus, with 4 strong spines along lateral border; distalmost such spine extending to midlength of carpus. Ischium longer than merus, with 8 spines along lateral border, increasing in size distally, and with single anterodistal spine on medial border. Exopod long, slender, reaching (excluding setation) just past midlength of endopodal merus, with numerous plumose setae beginning at approximate midlength of exopod, increasing in number toward tip.

Pereiopod 1 (Fig. 5a) short, stout, spinose. Dactylus approximately half length of propodus (including fixed finger). Propodus slightly swollen basally, with obvious cleaning brush on inner surface; setae of cleaning brush recessed centrally. Carpus with 6 heavy spines along outer (lateral) border and with cleaning brush on distomedial border (probably serving as opposing brush of propodus when pereiopod is flexed). Merus with 2 stout spines on me-

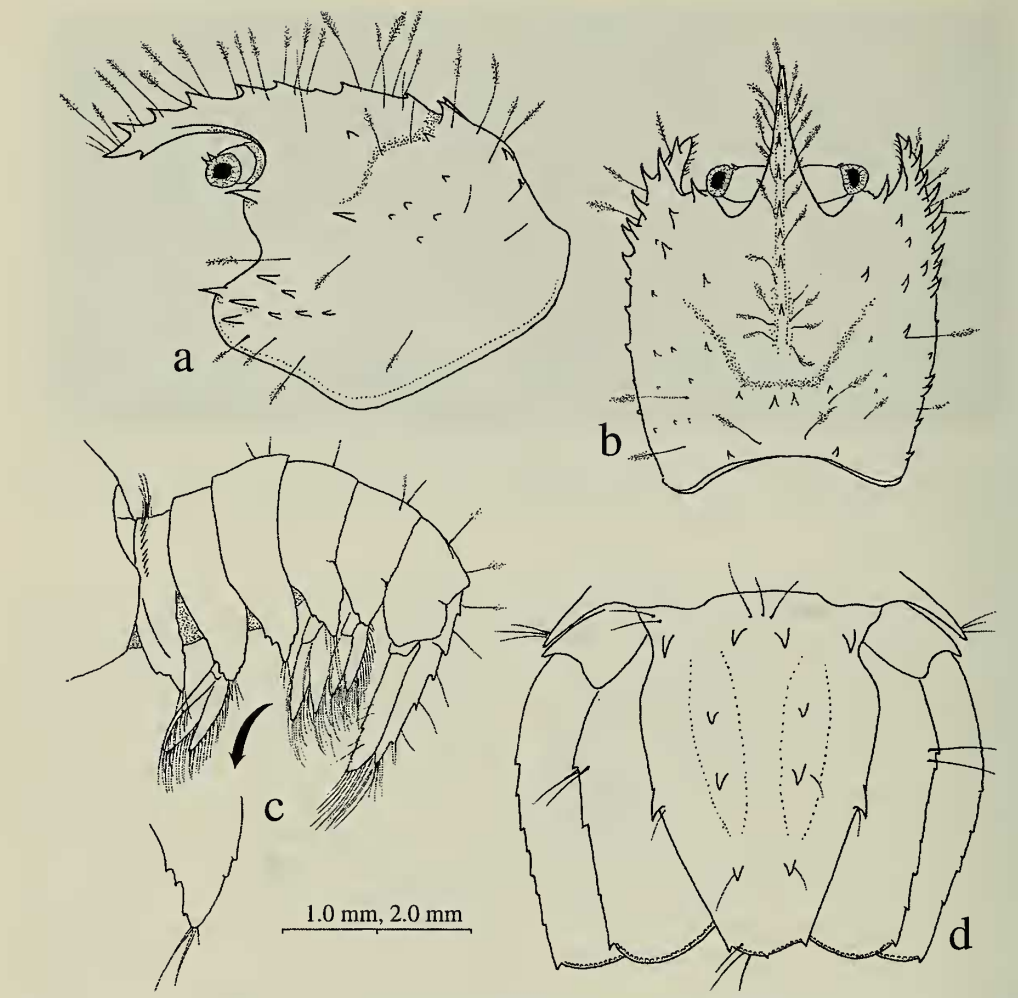


Fig. 3. *Microprosthema jareckii,* holotype male, LACM CR 2000 0082. a, carapace, lateral view; b, carapace, dorsal view; c, abdomen, lateral view, with tip of pleuron of abdominal somite 3 magnified to lower left (arrow); d, telson and uropods. Scale bar = 2.0 mm for a–c, 1.0 mm for d.

dial border and 4 spines, increasing in size distally, along lateral border, plus single sharp distolateral tooth. Entire appendage with scattered distally plumose setae on all articles except dactylus.

Pereiopod 2 (Fig. 5b) longer and more slender than pereiopod 1, lacking propodal-carpal cleaning brush. Cheliped fingers with small regularly spaced teeth along cutting edges; tips of fingers with clusters of simple setae. Carpus longer than other articles, with series of 5 heavy spines along outer (lateral) border. Merus with 2 stout spines on medial border and 4 stout spines along lateral border. Scattered, distally plumose setae on all articles except dactylus.

Pereiopod 3 (Fig. 5c) extremely large, heavy. Merus with 2 stout spines on inner (medial) border, 1 at approximate midlength and 1 at approximate ¾ length of merus. Carpus triangular in dorsal view and in cross section; dorsal surface slightly excavate, widening distally into shallow trough; lateral border of carpus with 4 stout spines and distolateral tooth; medial border with 3 small spines and cluster of short spines on distomedial border. Propodus deep, centrally thick but narrowing to bladelike carina

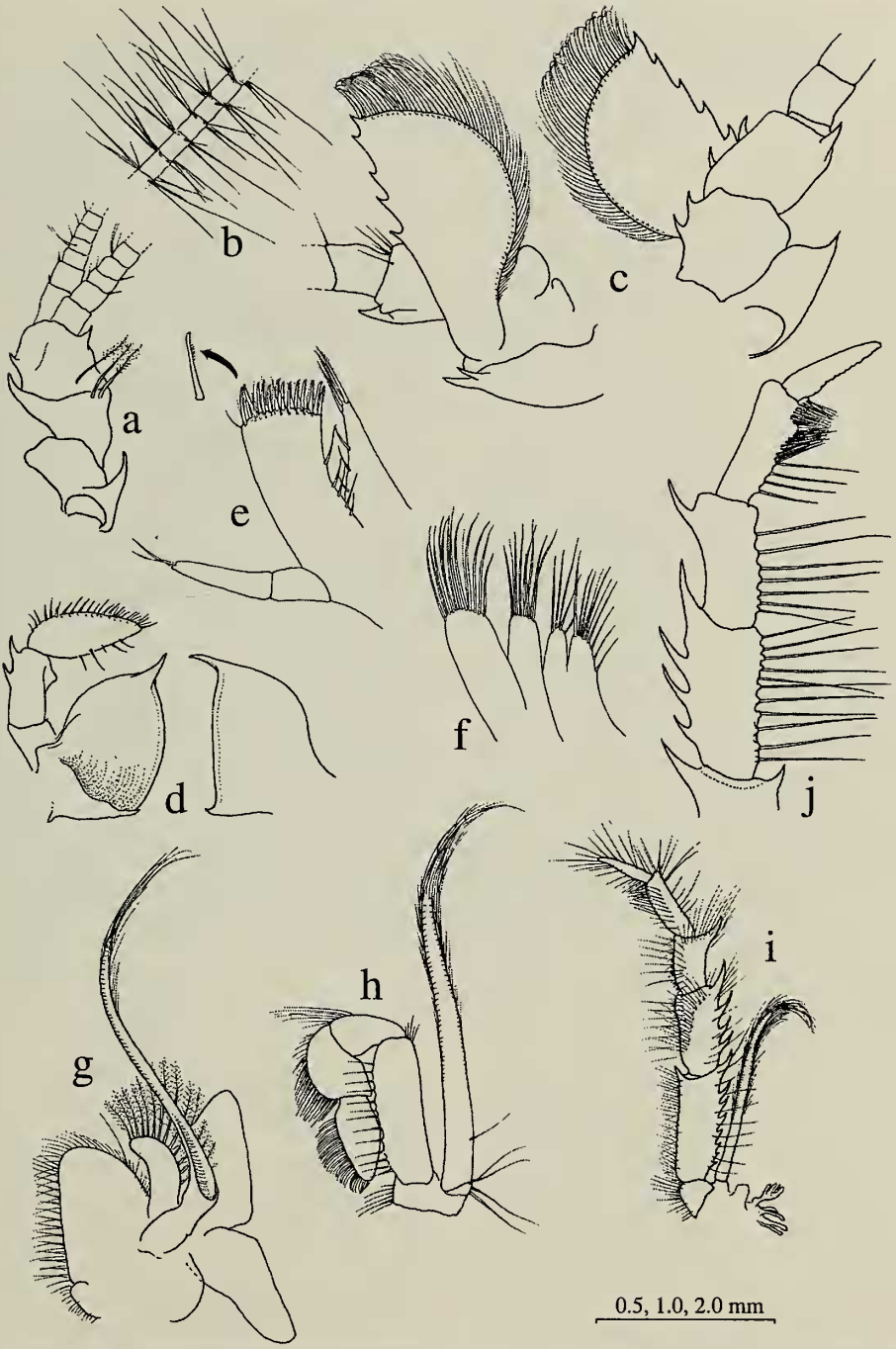


Fig. 4. *Microprosthema jareckii,* holotype male, LACM CR 2000 0082, antennae and mouthparts, left side. a, antenna 1 (antennule), ventral view; b, section of distal articles of antenna 1 flagellum showing setation; c, base of antenna 2 and scaphocerite, dorsal (left) and ventral (right) views; d, left mandible, inner (left) and outer (right) view; e, maxilla 1; f, endites of maxilla 2; g, first maxilliped; h, second maxilliped; i, third maxilliped (illustrated at different magnification from g and h); j, higher magnification of distal 4 articles of third maxilliped (same appendage as in i, but reversed to show other side) with only selected setae illustrated. Scale bar = 0.5 mm for e, f; 1.0 mm for a–d, g, h; 2.0 mm for i.

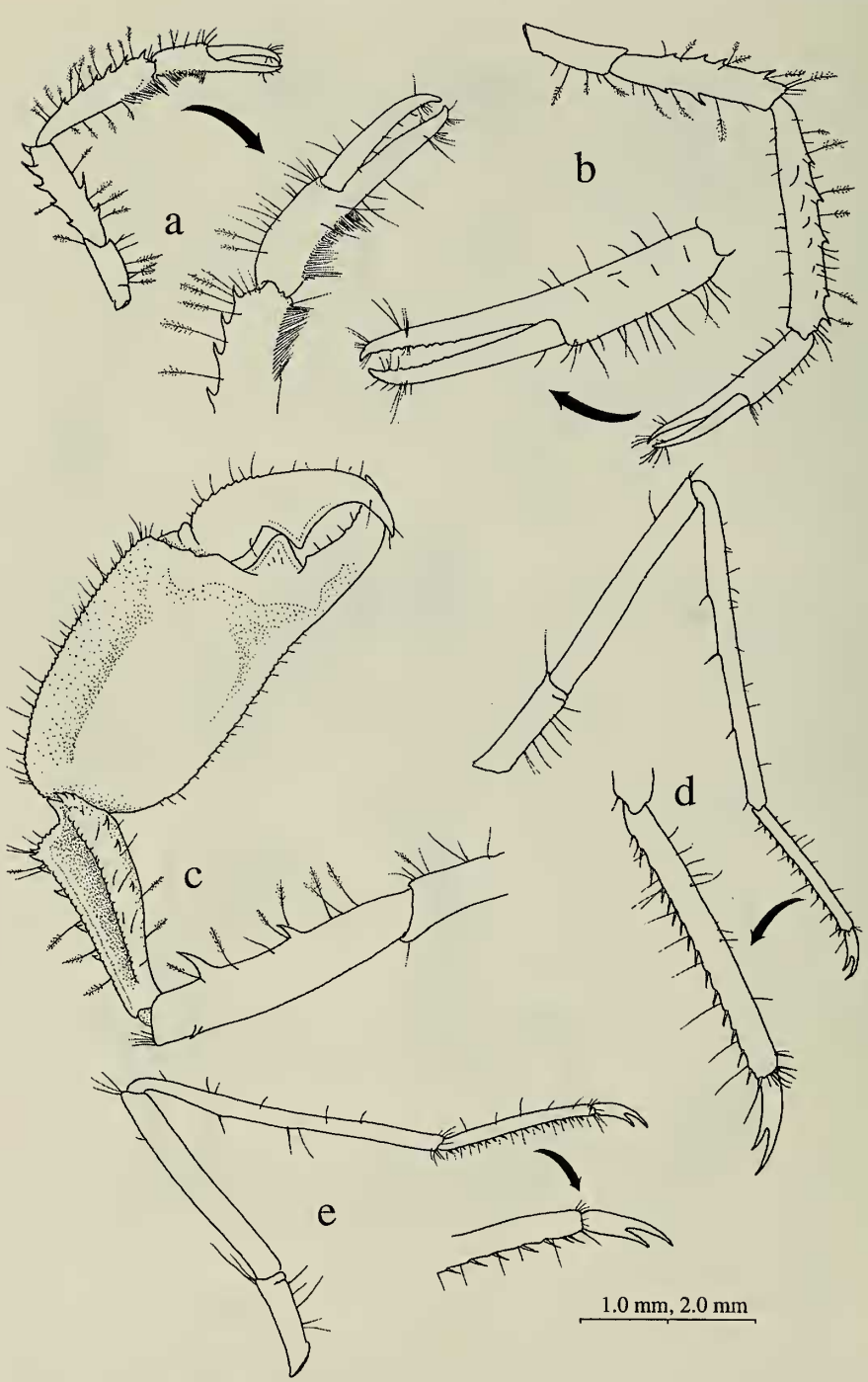


Fig. 5. *Microprosthema jareckii,* holotype male, LACM CR 2000 0082, left pereiopods. a, pereiopod 1, with higher magnification of chela and distal part of carpus (arrow); b, pereiopod 2, with higher magnification of chela (arrow); c, pereiopod 3, dorsolateral view; d, pereiopod 4, with dactylus and propodus magnified (arrow); e, pereiopod 5, with dactylus and part of propodus magnified (arrow). Scale bar = 1.0 mm for all figures except for close up views in a, b, d, and e (arrows), where scale bar = 2.0 mm.

dorsally (dorsal crista), with minute serrulations on dorsal border and ventral border, fading to smooth along ventral border of fixed finger; cutting edge of finger with large triangular tooth at base. Dactylus with minute serrulations on proximal third of upper (dorsal) surface; cutting edge with large triangular tooth opposite and just distal to similar tooth on propodal finger. Dactylar and propodal fingers slightly overlapping when chela closed. Entire chela high (dorsal to ventral) but thin (medial to lateral); inner surface of chela slightly concave, with chela curved inward toward front of animal.

Pereiopods 4 and 5 (Fig. 5d, e) long, slender, similar to one another, with short, bifurcated dactylus;. ventral branch of dactylus shorter, approximately half length of dorsal branch. Propodus undivided, with series of 15 (pereiopod 4) to 17 (pereiopod 5) short, sharp movable spines spaced regularly along ventral border. Carpus longer than merus, which is longer than propodus. Pereiopod 4 with 3 setae arising from slight ventral protrusion and with scattered simple setae dorsally; only 2 such setae (plus 1 seta not arising from protuberance).

Pleopods (not illustrated) as for genus (see Holthuis, 1946), with first pleopod uniramous and pleopods 2–5 biramous; all pleopods lacking appendices.

Telson and uropods (Fig. 3d) broad, strongly deflexed (Fig. 1, 2b, 3c), not visible or only partly visible in dorsal view in life (Fig. 2a); telson approximately equal in length to uropods. Exopod with 5–7 small teeth on lateral margin, terminating in acute tooth on distolateral corner; distal border smoothly rounded, with rounded border not exceeding length of distolateral tooth, continuing dorsally to form interior (medial) border. Endopod similar, with fewer teeth on lateral border and with rounded posterior border clearly extending beyond length of distolateral tooth. Both endopod and exopod heavily setose on posterior and medial borders. Telson subtriangular, with strong lateral teeth at approximate midlength. Dorsal surface with 4 teeth at anterior third and 2 longitudinal rows of 3 spines each. Lateral edges terminating distally in small acute tooth. Posterior border slightly curved, with small tooth at midpoint, and heavily setose.

*Color* (see Fig. 2).—In life, both specimens were completely white and slightly translucent (Fig. 2a, b). The only color discernable other than white was a yellowish central area under the carapace, caused by the hepatopancreas showing through the carapace. There were no other colors on any of the body parts.

*Sexual dimorphism.*—None apparent. The female allotype is similar in all regards to the male holotype, with the only distinguishing feature being the minute genital opening on the coxa of the third, as opposed to the fifth, pereopods. This difference is so slight, and the opening so difficult to detect, that it is even possible that both specimens belong to the same sex.

*Etymology.*—I am pleased to name this new species after Dr. Henry Jarecki, in appreciation for his concern for the preservation and conservation of our natural world, and especially for his vision in establishing a protected nature preserve on Guana Island, BVI.

*Habitat.*—Known only from Monkey Point, Guana Island, British Virgin islands, from an artificial reef matrix, 10 m depth. The surrounding seafloor was predominantly hard bottom with scattered coral heads, coral rubble, sea fans, and occasional pockets and channels of sand.

*Remarks.*—Of the previously described species of *Microprosthema* known from the Caribbean and western Atlantic, the new species is most similar in coloration to *M. manningi* and *M. looensis,* both of which were described by Goy & Felder (1988). Goy & Felder (1988: 1286) described coloration in *M. manningi* as being "whitish to pale tan; antennae, abdomen and appendages white, abdomen and pereiopods sometimes edged in tan or pale magenta." Coloration in *M. looensis* was described by them as "carapace and abdomen whitish

tan; antennae, telson, uropods, and all appendages white." Specimens of *M. looensis* held in captivity later appeared completely white (J. Goy, pers. obs.). Thus, all three of these species are predominantly white or whitish. However, an abundance of morphological characters serve to distinguish *M. jareckii* from *M. manningi* and *M. looensis.* Spination of the carapace in *M. manningi* is much more uniform than in *M. jareckii,* and the cervical groove is indistinct. The carapace spines of *M. looensis* are numerous and mostly blunt, rather than acute as in *M. jareckii,* the chela of the third pereiopod lacks the dorsal crista, the rostrum is shorter and ventrally unarmed, and all of the pereiopods are unique in being covered with short setae (see Goy & Felder 1988: fig. 7).

The new species shares with *M. manningi* the unusual and strikingly similar character of stout spines on the middle article of the mandibular palp (not known for any other species in the genus), and the more commonly encountered dorsal crista on the third pereiopod. However, the cutting edge of the mandible of *M. jareckii* is more similar to that of *M. looensis* in possessing a long acute process on the dorsodistal angle.

Coloration of *M. granatense,* currently known only from the southern Caribbean, was not noted by Criales (1997). However, *M. jareckii* is easily distinguished from *M. granatense* by the complete absence of spines on pereiopods 1 and 2, but a more spinose pereiopod 3, in *M. granatense,* as well as by differences in the spination of the carapace, relative width of the scaphocerite, subdivision of the propodus of pereiopods 4 and 5, relative height of the propodus of pereiopod 3, and spination of the third maxilliped.

Comparison of the new species to the widespread and commonly reported species *Microprosthema semilaeve* proved to be more difficult than expected, as that species has not been illustrated other than by Rankin (1898, plate 29, fig. 2, side view of whole animal), Holthuis (1946, plate 3, fig. i, scaphocerite only), and Rodríguez (1980, fig. 51, partial views of carapace and abdomen). Although the color notes provided by Manning (1961) are quite detailed, I have not been able to locate the specimen on which that note was based (Manning did not mention a repository, and I did not see any specimens of *M. semilaeve* from his collection site among the specimens at the USNM). Thus, although commonly reported in the literature and given the common name "crimson coral shrimp" by Williams et al. (1989), *M. semilaeve* lacks a thorough modern description. For the purposes of this report I am assuming that the crimson and white coloration described by Manning (1961) is specific to this species, and thus color pattern is one obvious difference between *M. jareckii* (completely white) and *Microprosthema semilaeve* (mostly brilliant red). Additionally, Goy & Felder (1988) examined 78 specimens of *M. semilaeve* and noted, among other characters, that in all specimens examined the "carpi and propodi of the third maxillipeds lack spines" (*M. jareckii* bears one very heavy spine on the corpus; see Fig. 4i, j), the "merus of the first pereiopod lacks spines" (there are seven heavy spines present on the merus of pereiopod 1 in *M. jareckii;* see Fig. 5a), and the "second pereiopod bears only one or two meral spines" (six are present in *M. jareckii,* Fig. 5b). Therefore, even without considering coloration, these obvious morphological differences confirm that *Microprosthema jareckii* is distinct from *M. semilaeve,* at least as defined and understood by Goy & Felder (1988).

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